## **CLAIMS**

## What is claimed is:

- 1. A semiconductor circuit fuse, comprising:
  an insulating substrate;
  a refractory metal nitride layer disposed above the insulating substrate; and
  a tungsten silicide layer disposed over the refractory metal nitride layer.
- 2. The semiconductor circuit fuse of claim 1, wherein the insulating substrate is an isolation region.
- 3. The semiconductor circuit fuse of claim 2, wherein the isolation region is a field oxide region.
- 4. The semiconductor circuit fuse of claim 3, wherein the field oxide region is disposed on a semiconductor substrate.
- 5. The semiconductor circuit fuse of claim 4, wherein the semiconductor substrate is a silicon wafer.
- 6. The semiconductor circuit fuse of claim 1, wherein the refractory metal nitride layer and the tungsten silicide layer are configured to a similar shape.
- 7. The semiconductor circuit fuse of claim 6, wherein the similar shape comprises a neck portion located between terminal portions.
- 8. The semiconductor circuit fuse of claim 7, wherein the neck portion is smaller in width than the terminal portions.

- 9. The semiconductor circuit fuse of claim 8, wherein the neck portion has a width within a range of about 0.2 to about 1 micron.
- 10. The semiconductor circuit fuse of claim 9, wherein the width of the neck portion is about 0.35 microns.
- 11. The semiconductor circuit fuse of claim 9, wherein a length of the neck portion is within a range of about 1 to about 10 microns.
- 12. The semiconductor circuit fuse of claim 11, wherein the length of the neck portion is about 3.5 microns.
- 13. The semiconductor circuit fuse of claim 1, wherein the refractory metal nitride layer comprises titanium nitride.
- 14. A semiconductor circuit fuse, comprising: an insulating substrate; a refractory metal nitride layer disposed above the insulating substrate; and a conductive layer disposed over the refractory metal nitride layer.
- 15. The semiconductor circuit fuse of claim 14, wherein the insulating substrate is an isolation region.
- 16. The semiconductor circuit fuse of claim 15, wherein the isolation region is a field oxide region.
- 17. The semiconductor circuit fuse of claim 16, wherein the field oxide region is disposed on a semiconductor substrate.

- 18. The semiconductor circuit fuse of claim 17, wherein the semiconductor substrate is a silicon wafer.
- 19. The semiconductor circuit fuse of claim 14, wherein the refractory metal nitride layer includes titanium.
- 20. The semiconductor circuit fuse of claim 14, wherein the refractory metal nitride layer comprises titanium nitride.
- 21. The semiconductor circuit fuse of claim 14, wherein the conductive layer is selected from the group consisting of a metal, metal alloy and metal compound.
- 22. The semiconductor circuit fuse of claim 14, wherein the conductive layer comprises tungsten silicide.
- 23. The semiconductor circuit fuse of claim 14, including configuring the refractory metal nitride layer and the conductive layer to a similar shape.
- 24. The semiconductor circuit fuse of claim 23, wherein the similar shape comprises a neck portion located between terminal portions.
- 25. The semiconductor circuit fuse of claim 24, wherein the neck portion is smaller in width than the terminal portions.
- 26. The semiconductor circuit fuse of claim 25, wherein the neck portion has a width within a range of about 0.2 to about 1 micron.
- 27. The semiconductor circuit fuse of claim 26, wherein the width of the neck portion is about 0.35 microns.

- 28. The semiconductor circuit fuse of claim 27, wherein a length of the neck portion is within a range of about 1 to about 10 microns.
- 29. The semiconductor circuit fuse of claim 28, wherein the length of the neck portion is about 3.5 microns.
- 30. A method of using a fuse in an integrated circuit, comprising:

  providing a fuse containing a conductive layer and a refractory metal nitride layer disposed above
  an insulating substrate and having a neck portion extending between terminal portions,
  the neck portion having a width of about 0.35 microns; and
  applying electrical current between the terminal portions sufficient to blow the fuse by causing
  the neck portion of the conductive layer to melt.
- 31. The method of claim 30, including providing the neck portion with a length of about 3.5 microns.
- 32. The method of claim 30, including applying an electrical current within a range of about 1 to about 25 mA.
  - 33. The method of claim 30, including applying an electrical current of about 5.5 mA.
- 34. A method of using a fuse in an integrated circuit, comprising:

  providing a fuse containing a conductive layer and a refractory metal nitride layer disposed above
  an insulating substrate and having a neck portion extending between terminal portions;
  and
- applying electrical current within a range of about 1 to about 25 mA between the terminal portions sufficient to blow the fuse by causing the neck portion of the conductive layer to melt.

- 35. The method of claim 34, including providing the neck portion with a length of about 3.5 microns.
- 36. The method of claim 34, including providing the neck portion with a length of about 0.35 microns.
  - 37. The method of claim 34, including applying an electrical current of about 5.5 mA.